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# What can city leaders do for climate change? Insights from the C40 Cities Climate Leadership Group network

Alessandro Sancino<sup>a</sup> , Max Stafford<sup>b</sup> , Alessandro Braga<sup>c</sup>  and Leslie Budd<sup>d</sup> 

## ABSTRACT

This paper sheds light on what city leaders can do about climate change in the context of the complex extra-territorial challenges they face. We created an original database of those actions implemented by members of the C40 Cities Climate Leadership Group and investigated which boundary organizations, objects and experiences ('boundary cooperative arrangements') can be triggered to undertake climate change actions by city leaders. Through a secondary qualitative analysis, we identified six main actions. The research advances knowledge on both place leadership and collaborative governance, and the findings represent a tool for better tackling the 'wicked problem' of climate change.

## KEYWORDS

place leadership; cities; climate change; collaborative governance

JEL H83, L32, M10

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## INTRODUCTION

The urban population of the world has grown significantly, with about 54% currently living in urban areas, a proportion set to increase to 66% by 2050 (United Nations, 2018). This population growth is increasingly distributed across mega-cities. In 2016 there were 31 mega-cities with a population of over 10 million and eight of them with over 20 million (United Nations, 2016a). Such rapid growth brings in its wake localized impacts from global challenges such as climate change and environmental sustainability for these places and their leadership (C40 Cities Climate Leadership Group, 2015). The recent Inter-Governmental Panel on Climate Change (IPCC) (2021) report includes a chapter that examines from global to regional impacts of climate change, which although apparently is extra-territorial, affects urban places differently. Consequently, for place leaders, boundary spanning and boundary cooperation become crucial not only in the development of


collaborative governance, but also to address local and regional impact of global challenges (Dąbrowski, 2017; Sørensen et al., 2020). The important impacts of cities and urbanization in our world are widely recognized (Barber, 2013; Hambleton, 2014), with increasing focus on the role of cities for the achievement of the United Nations' Sustainable Development Goals (SDGs) (Graute, 2016; Pipa, 2020; United Nations, 2016b). In particular, cities are major contributors to climate change (e.g., Acuto, 2013a; While & Whitehead, 2013), one of the most important 'grand challenges' facing humanity in the 21st century. Grand challenges are defined as 'formulations of global problems that can be plausibly addressed through coordinated and collaborative effort' (George et al., 2016, p. 1880).

Cities account for 70% of global greenhouse gas emissions (Acuto, 2016, p. 612), even though they cover less than 2% of the Earth's surface (United Nations, n.d.). It is, therefore, clear that our fight against climate change will depend on what is happening in and around cities.


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However, we still understand very little about the specific approaches city's leaders are taking to address this issue. In this respect, the experiences of cities' participation in the C40 Cities Climate Leadership Group (hereafter C40) illustrate how urban areas can take actions and make a difference.

In brief, the C40 is a group of 96 cities representing over 650 million people and one-quarter of the global economy. It aims to tackle climate change and gathering urban action for reducing greenhouse gas emissions and climate risks (whilst increasing the health, well-being and economic opportunities of urban citizens). The C40's website is one of the most important repositories of knowledge about actions implemented by cities to cope with climate change, with an active store of contemporary case studies.

Drawing upon an original dataset (formed from this repository of case studies), this article presents the results of an examination of the climate-mitigation actions undertaken by C40. Our research question was the following: How do city leaders undertake actions (defined as making things happen) for tackling and mitigating climate change? Specifically, our original research identifies which boundary organizations, objects and experiences ('boundary cooperative arrangements') can be used by city leaders to promote and sustain climate change actions.

We focus on boundary cooperative arrangements that are present in city actions for tackling climate change (Huxham & Vangen, 2000, p. 1160; Nicholds, 2021; Sotarauta et al., 2017, p. 188), acknowledging the role of collaboration and boundary spanning (Beer et al., 2019; Broadhurst et al., 2021a) as key enablers of place-based leadership (given the polycentric, multilevel and hybrid systems of collaborative governance in whose city leaders operate) (Jordan et al., 2018; Kim, 2016; Skelcher et al., 2013; Torfing et al., 2012).

We take a broad view of city leaders and their leadership arenas (e.g., Bowden & Liddle, 2018; Budd et al., 2017; Budd & Sancino, 2016; Hambleton, 2014; Lazzarretti & Tavoletti, 2005; Potluka et al., 2021; 't Hart & Tummers, 2019). Drawing from a quintuple-helix model (Carayannis et al., 2012), we consider a broad range of leaders, such as politicians and public, business and third-sector managers, but also, for example, active lay citizens, academics, journalists and social media leaders, and social innovators/entrepreneurs. The article draws specifically on the literature on place leadership and collaborative governance (which both emphasize the key importance of boundary-spanning leadership in affecting change) and connects, too, with the literature on grand challenges in management and organization studies. This, for example, includes the work of George et al. (2016, p. 1880), who highlighted the fundamental role of coordinated and collaborative efforts and mechanisms for addressing grand challenges.

The paper is structured as follows. The next section provides the theoretical backdrop to our work. The third sets out the methodology and how we constructed our original dataset. The findings are presented in the fourth section; and concluding remarks and policy implications are provided in the fifth section.

## THE AGENCY OF CITY LEADERSHIP: PLACE BASED AND COLLABORATIVE

City leadership refers to 'how cities are led, managed, championed and reformed' (Rapoport et al., 2019, p. ix). Research on city (and subnational) leadership is on the rise (Beer et al., 2021), and a recent handbook (Sotarauta & Beer, 2021) has provided a solid grounding for future studies. From an intellectual point of view and by relying on our knowledge of the field, at least two lines of research and theory can help to better explain city leadership dynamics (Acuto, 2013b; Brandtner et al., 2017; Budd & Sancino, 2016; Hambleton, 2007, 2014; Marshall & Finch, 2006; Sancino & Hudson, 2020; Sweeting & Hambleton, 2020). These are place leadership (Beer & Clower, 2014; Sotarauta, 2015) and collaborative governance (Ansell & Gash, 2008; Emerson et al., 2012).

Place leadership and collaborative governance have in common both a focus on public value and spaces and the recognition of the dispersed and different nature of actors, powers, knowledge and resources that are needed to achieve public value, in the many shapes, value(s) and policy domains where they can occur. Moreover, differently from the studies taking an organizational perspective on leadership (Nicholds, 2021), they share a focus on the inter- and extra-organizational and ecosystemic levels of analysis to understand processes and practices aimed at the co-creation of public outcomes within places (Bailey et al., 2020; Ongaro et al., 2021; Sancino, 2016). A third and other important element in common is the acknowledgement of the role played by institutional governance structures, whilst simultaneously recognizing the key role of agency in changing those structures and creating new ones (Grillitsch & Sotarauta, 2020). We now provide a short overview of these two literatures, starting with place leadership.

Place leadership is a field of research that has been flourishing in urban and regional studies (Beer & Clower, 2014; Sandford, 2020; Sotarauta et al., 2012) since the publication of a 2010 special issue in *Policy Studies* (Collinge et al., 2010), plus two other successful special issues later in *Regional Studies* (Sotarauta et al., 2017) and *Local Economy* (Bartling, 2017). There is, now, also the above-mentioned handbook (Sotarauta & Beer, 2021).

Place leadership derives from the assumption that leadership can transform places as much as places can influence leadership (Collinge et al., 2010; Jackson, 2019; Liddle, 2010). In this respect, place leadership depends more upon the resources and knowledge already embedded within a place than upon external resources (Sotarauta & Beer, 2017). It relies on the importance of context to understand and influence leadership action (where leadership is 'socially constructed in and from a context where patterns over time must be considered and where history matters'; Osborn et al., 2002, p. 798). The focus on leadership stems from the appreciation of the role of human agency in the economic development of places through processes and practices – such as those of

mobilization, facilitation, change, influence and sense-making. In the words of Sotarauta and Beer (2021, p. 2) 'it focuses our attention on movement, influence, people and their relationships by linking agency and context'.

Place leadership provides 'an additional "agential" lens through which issues of structure and agency can be explored in urban and regional development' (Sotarauta et al., 2017, p. 187). Agency is conceived of as being 'inherently collective' (Raagmaa & Keerberg, 2017, p. 262) and based upon 'the tendency of the community to collaborate across sectors' (Stough et al., 2001, p. 177). Thus, place leadership is systemic and less hierarchical than leadership in conventional government or corporate settings (Nicholds, 2021; Sotarauta, 2016b; Sotarauta & Beer, 2017) and it can be seen through governance structures, change processes and network relationships. However, place leadership may be often hardly visible, because 'it is a hidden form of leadership shadowed by governance structures, regional development strategies, and other formal and visible manifestations of development efforts' (Sotarauta, 2016a, p. 45).

Place leadership may not be immediately visible, because it is a dispersed and multi-scale form of leadership too (Ayres, 2014; Sotarauta, 2016a). Hence, both formal and informal leaders may influence the development of policy initiatives by using different levels of formal or informal powers and they may need to reach beyond their jurisdiction by engaging wider networks of influence (e.g., Ayres, 2020). The influence of formal authority and hierarchy should not be overlooked but there is much beyond it (Sotarauta, 2016b). The powers, competencies and resources needed to make a difference in places are widespread among many actors (i.e., policymakers, universities, non-governmental organizations (NGOs), citizens and citizens' associations).

Within places actors, powers, knowledge and resources are distributed and relational (Vallance et al., 2019). Thus, one of the constructs on which place leadership is based deals with the potential for new and stronger relationships between government, business and civil society to create resilient places and communities able to deal with sustainable development challenges (Beer & Clower, 2014; Budd & Sancino, 2016; Duit, 2016; Hambleton, 2014; Hambleton & Howard, 2012; Sotarauta & Beer, 2017). The focus on collaboration in place leadership builds a convenient bridge with the research on collaborative governance.<sup>1</sup>

Both collaborative governance – which stems from public administration (Ansell & Gash, 2008; Bryson et al., 2015; Emerson et al., 2012) – and place leadership rely on the foundation that, from the perspective of the city, it is mainly through shared agency and collaboration that 'things/actions happen and get done – or not' (Huxham & Vangen, 2000, p. 1160; Sotarauta et al., 2017, p. 188). No single actor has all the resources and capabilities to (co)create collective public value (Bryson et al., 2017). That intersection is so evident that the most comprehensive study so far on place leadership, including six countries across three continents, concluded that boundary-spanning is essential (Beer et al., 2019). This a concern

shared by Getha-Taylor et al. (2011, p. 84), who discussed public leadership challenges, and by Sørensen et al. (2020), who highlighted the important role politicians might play in boundary spanning at the interface between collaborative governance and representative democracy.

This relationship is also underpinned by debates about multilevel governance that along with boundary spanning provide useful conceptual anchors to assess the role of cities in adapting to and mitigating climate change (Budd & Sancino, 2016; Dąbrowski, 2017; Hooghe & Marks, 2003). With respect to the interrelationship between cities and climate change, adaptation policy is defined as:

the process leading to the production of outputs in forms of activities and decisions taken by purposeful public and private actors at different administrative levels and in different sectors, which deals intentionally with climate change impacts, and whose outcomes attempt to substantially impact actor groups, sectors, or geographical areas that are vulnerable to climate change.

(Dupuis & Biesbroek, 2013, p. 1480)

With respect to boundary spanning as an agency of adaptation policy, the evolution of co-production of public services is a prime example (Sorrentino et al., 2018).

In order to define boundary-spanning, there are two perspectives: that of 'who' are the boundary spanners and 'what' they do. As for the first, boundary spanners are 'key agents managing within interorganizational theaters' (Williams, 2002, p. 103) and, in particular, 'individuals who engage in networking tasks and employ methods of coordination and task integration across organizational boundaries' (Alter & Hage, 1993, p. 46). Regarding the second element, van Meerkerk and Edelenbos (2016, pp. 471–472) identified four main boundary spanning activities:

- Connecting and linking different people and processes across organizational boundaries.
- Selecting relevant information on both sides of the boundary.
- Translating this information to the other side of the boundary.
- Creating and establishing new or innovative cooperative arrangements between community, government and/or professional organizations (from the private or societal sectors).

We focus on the fourth and latter type of boundary-spanning activities (creating boundary cooperative arrangements). Following Morse (2010), we identify three types of those boundary cooperative arrangements mentioned by van Meerkerk and Edelenbos (2016), namely: boundary experiences, boundary objects and boundary organizations:

- Boundary *experiences* are 'shared or joint activities that create a sense of community and an ability to transcend



- boundaries among participants' (Feldman et al., 2006, p. 94).
- Boundary *objects* are 'artifacts of integration' (Morse, 2010, p. 242). They 'have different meanings in different social worlds but their structure is common enough to more than one world to make them recognizable' (Star & Griesemer, 1989, p. 393).
  - Boundary *organizations* can be defined as 'forums where multiple perspectives participate and multiple knowledge systems converge' (Carr & Wilkinson, 2005, p. 261).

## MATERIALS AND METHODS

Our research is based on a qualitative approach and it is grounded in a critical realist framework (Fletcher, 2017). The literature review discussed the placed-based and collaborative elements of city leadership. These features are fundamental to understand and explain the processes according to which people are engaged across the boundaries of organizations (private, public, non-profit or civil society). Specifically, to investigate the types of boundary arrangements used in a given locality to sustain collaborative processes, the paper uses the framework designed by van Meerkerk and Edelenbos (2016) focusing on boundary cooperative arrangements. As presented above, our research question was the following: How do city leaders undertake actions (defined as making things happen) for tackling and mitigating climate change?

The research strategy followed four main steps. First, a dataset was created by cataloguing case studies from the C40's website (January 2015–May 2018). This allowed us to focus upon recent practices and deal with a manageable amount of data. When selecting cities, three types of cities have been excluded: Chinese cities, capital and 'deliberate' cities. Chinese cities were not included because their empirical context may not fit with our focus on collaborative governance (this assumes that collaboration is not mandated, which may run counter to the Chinese case) (Campanella, 2008). Capital cities were excluded due to the peculiar characteristics they exhibit (i.e., the presence in the same place of both local and/or regional, and also central government). 'Deliberate' cities are those that have been actively created in shorter timeframes rather than developed organically over longer periods. For instance, modern Dubai might be included in this category. This third type of cities was excluded as its more conceived nature means that governance and leadership arrangements have often preceded cities' establishment. Thus, they approach existing public policy problems in a different manner. Collectively, this meant that the study was left with a dataset comprised of 145 case studies. This translated into 38 cities because many case studies related to the same city (e.g., there were 18 case studies related to New York City). A list of the cities is reported in Table A1 in the supplemental data online.

Our second step conducted a thematic qualitative data analysis for the 145 case studies using the categories of

actors, structures and processes for coding purposes. We chose these categories because they have been used in existing frameworks to unpack dynamics of both public and city leadership (Budd et al., 2017; Budd & Sancino, 2016; Hartley & Allison, 2000) and collaborative governance (Huxham & Vangen, 2000; Vangen et al., 2015). Thematic qualitative analysis (Braun & Clarke, 2012) seemed particularly appropriate given that it allows for both systematic analysis and the linking of case studies to broader theoretical or conceptual issues. One author conducted the so-called 'familiarization' of the data (Braun et al., 2016). This consisted in becoming familiar with the content of the data. The authors read all data items and made notes about the main themes of interest, then two of them conducted a pre-coding process. Specifically, they coded the first 10 cases for the purposes of quality control and consistency in coding. During this phase, the authors observed the interrater agreement to ensure rigour in the thematic analysis. The interrater agreement represents the degree of agreement among raters. Its score shows how much consensus there is in the ratings given by the authors. If both authors agree on a higher percentage of the items coded, this indicates that the data are trustworthy (e.g., Mathet et al., 2015). Accordingly, the authors calculated an interrater agreement score using Cohen's Kappa, which is a robust index score for interrater reliability testing. The first test for this subsample scored 0.7. The authors discussed inconsistencies in coding and then calculated the interrater agreement score on a second initial subsample of 10 case studies, obtaining a satisfactory score of 0.88. The remaining case studies to be coded were assigned in similar proportion between the two specific authors.

The third step (second-order coding) consisted in working on the database (including first-order codes of the 145 case studies about the key actors, structures and processes) to categorize the actions that have happened through the interplay of actors, structures and processes. The authors worked to keep coding open and inclusive in order to build the themes (in this case, boundary cooperative arrangements) gradually. We worked iteratively and included the actions which reached a threshold of 10 – in other words, the action occurred at least 10 times throughout the 145 case studies. This threshold was used as the point of demarcation to reach saturation of findings (Thomas & Harden, 2008). The analysis showed that different case studies included more than one action. We identified a total of 166 actions for addressing climate change.

Finally, as a fourth step and third order of coding, all the 166 actions were then categorized according to the three main boundary cooperative arrangements identified in the theory section, (boundary experiences, boundary objects and boundary organizations) for a total of six main types of actions that we detected (Table 1). For example, boundary experiences could be public hearings involving members from the civil society, business and public sector with the aim of developing public participation and engagement around a common theme

**Table 1.** Number of actions identified.

Actions	Number of actions
New products/services	55
New organizations	30
Public programmes with financial incentives and technical support	26
Awareness and educational campaigns	26
Local regulations, plans and guides	19
Strategic engagement and participation	12
Total	166

Source: Authors' elaboration.

(such as pollution). Boundary objects can be reports, or management tools that are co-produced by actors on different sides of the boundaries. Boundary organizations can be formal or informal relational structures, for example, public-private partnership (PPP), as well as co-laborative schemes created to be structural or institutional catalysts.

## FINDINGS

This section presents our findings, which highlight the six main types of activities grouped according to each type of boundary spanning cooperative arrangement that they refer to (Table 2).

Each 'activity' represents a boundary-spanning activity involving diverse institutional and organizational settings on both sides of the state-society interface (van Meerkerk & Edelenbos, 2016). In the next subsections, we provide some illustrative examples (fully listed in Table A2 in the supplemental data online) to describe some representative actions for each type identified.

### Boundary experiences

#### *Awareness and educational campaigns: case examples*

We report three illustrative examples. First, bottom-up initiatives, for example, peer-learning networks from residents to enhance environmental performance on energy and waste, were promoted in the residential apartments' sustainability plan in Sydney. Second, in the city of Rotterdam, coloured roofs represent active elements of the city's climate adaptation strategy. Four colours have been used to communicate four different climate change actions. Blue roofs retain water, green roofs add biodiversity, yellow roofs produce renewable energy and red roofs add social value. Third, Medellín (Colombia) made another type of awareness and educational campaign by including local communities into the process of planting thousands of native trees.

#### *Strategic engagement and participation in open platforms: case examples*

Project Greenovate in Boston established a digital platform for communication, community engagement and recognition of achievements on environmental action. The project uses a state-of-the-art system to track and measure how well campaigns and events spur environmental action. The Indian city of Chennai engaged community-based organizations in the city's waste management strategy. The support of community-based organizations improved environmental management in the city and raised awareness towards these issues. In Rotterdam the Climate Change Adaptation Strategy has been developed through a network of local actors such as governments, residents, businesses, housing associations, developers, knowledge institutions and interest groups. Similarly, Vancouver developed a neighbourhood energy strategy to help the city to lower its carbon fuel emissions

**Table 2.** Actions grouped by types of boundary spanning.

Types of boundary spanning	Themes in our qualitative analysis	Descriptions
Boundary experiences	Awareness and educational campaigns	Sense-making and -giving actions and campaigns to make individuals and organizations aware of climate change issues
	Strategic engagement and participation	Engagement in collective processes that identify guidelines and/or objectives and participation in open platforms and initiatives to track and share environmental action
Boundary objects	Local regulations, plans and guides	Different documents that serve as artifacts of integration of different stakeholders
	New products/services	New products or services introduced by individuals and/or organizations to address climate change
Boundary organizations	Public programmes with financial incentives and technical support	Public programmes providing financial incentives and/or technical support from local governments and/or other professional and funding bodies
	New public enterprises	New (formal or informal) structures (e.g., networks, public-private partnerships, public partnerships)

Source: Authors' elaboration.

and promote the development of greener energy systems in high-density areas. The process allowed stakeholders to co-create the Energy Centre Guidelines.

In all these cases, strategic engagement processes acted as actions that mobilized commitment of multiple actors toward climate change initiatives.

### Boundary objects

#### *Local regulations, plans and guides: case examples*

As clarified by Star (2010), boundary objects are created when members of different communities collaborate. However, those arrangements may happen without necessarily coming to a consensus. Therefore, local regulations can still be considered boundary objects. The thematic analysis identified different local regulations as leverages for actions on climate change: from lower impact schemes (compensating schemes) to more intensive regulatory schemes (property tax). Such actions mainly affect businesses and building owners. However, specific activities have been put in place to target citizens' behaviours and professionals too. For example, Melbourne issued the Growing Green Guide for raising the awareness amongst professionals involved in the design, construction and maintenance of green roofs, walls and/or facades. The guide included a technical section in which civil engineers and professionals can find factors that need to be considered to design, construct and maintain green roofs, walls and facades.

The City of New York implemented the Greener, Greater Buildings Plan as its principal energy efficiency legislative package. It comprised energy audits and cost-effective retrofit measures and the promotion of clean energy. San Francisco instead initiated a process towards energy-saving buildings by expanding upon *existing* legislation, requiring large commercial buildings to report their energy usage every year.

#### *New products/services*

New York and Copenhagen introduced a combination of integrated planning (IP) with a blue-green infrastructure (BGI) to manage extreme rain events, improve CO<sub>2</sub> sequestration and increase biodiversity. In particular, the BGI connects urban hydrological functions with vegetation systems to offer valuable solutions for urban areas.

The City of Portland's 2015 Climate Action Program set up a new consumption inventory data collection, enabling the city to drive down greenhouse gas emissions. The new system analyses data on spending by households, government agencies and business capital investment, and takes into account the entire value chain of green products and services.

In 2013, the City of Bengaluru (India) launched a new geographical information system (GIS)-based model for its solid waste management. The GIS system enables the city to store, analyse and share different geographical information, and it enables a cost-efficient waste management system by using optimal route algorithms and automated rules for data collection.

### Boundary organizations

#### *Public programmes providing financial incentives and technical support*

Barzelay (2019) explained that there are two main mechanisms to design interventions that aim to achieve publicly valued outcomes: public programmes and public enterprises. The first does not necessarily imply the creation of a new institution. The focus here is on public programmes providing financial incentives (incentives schemes, public investment funds, mitigation banking programmes, etc.) and/or technical support to tackle climate change. In New York, the Retrofitting Trucks for Cleaner Air programme provides financial incentives to truck owners operating in the South Bronx. Incentives are linked to both the retrofitting of diesel exhaust systems and the replacement of older trucks with newer and cleaner models (hybrid-electric, compressed natural gas or fully electric models).

New Orleans and its various offices developed three public programmes using financial incentives. First, it opened an emergency account programme for matching financial savings for low and moderate-income families. Second, it created an emergency fund dedicated to natural disaster response. Third, it issued an *incentivization* system for property owners with the aim of investing in risk reduction.

The City of Vancouver's Operation Co\$t Cutter initiative provides implementation coordination and support. It eases retrofitting projects executions by offering both technical support and financial incentives to property owners. Similarly, Rio de Janeiro delivers technical support and helps companies to identify grants for projects whilst supporting them through the application process.

#### *New public enterprises*

Boston created the Renew Boston Trust – a PPP for channelling private investors' funds into energy efficiency and renewable energy projects in commercial-sector buildings. Similarly, the initiative Buffelsdraai Landfill Management in Durban has been developed through a PPP between eThekweni Municipality Environmental Planning and Climate Protection Department, Wildlands Conservation Trust (WCT) and eThekweni Municipality's Durban Solid Waste (DSW). Vancouver has established the South East False Creek Neighborhood Energy Utility (a publicly owned network) with a 'wholly public' business model. Its mission is to recover wasted heat from untreated urban wastewater and recycles it.

## DISCUSSION AND CONCLUSIONS

In this paper we aimed to identify city actions that were developed by members of the C40. From a place leadership perspective, city actions can be viewed through the prism of the interplay of actors, structures and processes in polycentric, multilevel and hybrid systems of collaborative governance. Specifically, we focused on three types of boundary cooperative arrangements, namely, boundary



experiences, objects and organizations. Our analysis from an original dataset identified six main types of actions implemented by C40 cities, which, in decreasing order are: new products/services; new public enterprises; public programmes providing financial incentives and/or technical support; awareness and educational campaigns; local regulations, plans and/or guides; and strategic engagement and participation.

We were influenced by the idea to scale up actions for climate change, making knowledge on the range of opportunities for city actions more accessible and available to a larger audience than just the C40 network. This intention was grounded in the assumption that, very often, grand challenges such as climate change may seem rather abstract and distant from everyday life. On the contrary, as argued, for example, by Van Aalderen and Horlings (2020), we have shown that some types of action, such as boundary experiences, including strategic engagement and participation; awareness and educational campaigns, can be activated by any citizen willing to take up a civic leadership role, as the case of Greta Thunberg clearly shows.

This paper contributes to the generation of knowledge on place leadership by addressing the call of Sotarauta et al. (2017, p. 188) to shed light on ‘the things that people actually do to influence other people in these very particular types of settings both formally and informally – openly as well opaquely – and how they go about doing what they do’. Our ‘menu’ of city actions, and the related boundary cooperative arrangements that can be designed to sustain those actions, also carries important implications from a policy point of view. Local and regional governments, alongside national governments, may in fact use that menu to set up actions themselves to intelligently graft and transplant those initiatives (Hartley & Benington, 2006). Perversely, it can be argued that the ‘shock’ of climate change and its local and regional impacts is creating the conditions for greater innovation at urban and regional scales. In particular, the interaction of place-based leadership and boundary spanning provides a locus for addressing this global challenge (Sotarauta & Suvinen, 2019).

City leadership, as much as top-down national and regional policy, has a decisive role in shaping the longer term adaptive and resilient capabilities of places and communities (Beer et al., 2019). If we see city leadership as an adaptive and emergent system of formal and informal interactions among interdependent actors (individuals and organizations) who come from different sectoral and organizational contexts (e.g., Budd et al., 2017), then experimental, ad-hoc and bottom-up policies for supporting local and regional partnerships and for institutionalizing spaces and tools for innovation, collaboration and learning should be considered (Broadhurst et al., 2021b; de Jong et al., 2021; Waardenburg et al., 2020).

Moreover, platforms for sharing learning amongst cities and for expanding these actions to cities of lesser dimensions can be promoted and activated. According to Ansell and Gash (2018, p. 29), platforms refer ‘to a relatively stable organizational framework upon which multiple shorter-term or more specialized projects or networks can be built

and where “many-to-many” (multilateral) collaborative relationships are facilitated’. In this respect, evolving from a network to a platform type of open governance (Ansell & Miura, 2020; Meijer et al., 2019) can be an important development both for the C40 itself – as well as other cities and regions willing to act as catalysts for learning, activation and development of the city actions we identified, by relying on the potential of narratives for research, learning and for inspiring action (Dinmore & Beer, 2021).

Managers and professionals whose mandates refer to climate change policies might find this paper instructive in undertaking their work. Moreover, civic leaders from any arena of city leadership, also including civil society, can be inspired by our taxonomy of city actions for climate change to step up and activate similar processes and practices in other cities. The key principle will be to adopt a place-based approach and hence adapt the project to the characteristics of each place.

Finally, a few notes about our research. The research adopted a secondary qualitative analysis for advancing knowledge about boundary cooperative arrangements by relying on an open database ‘validated’ by an external institution such as the C40 network. Advantages of this method deal with sampling, data processing, collection processes and the availability of a rich database.

Nevertheless, this research suffers from two main limitations. First, the focus is on boundary cooperative arrangements and not on boundary spanners. In other words, it does not concentrate on analysing the processes of boundary-spanning pursued by local leaders. For example, in the case of climate change, the threat from the rise of national populism in opposition to the 2015 Paris Agreement is a significant challenge for boundary spanning by city leadership. The purpose of this research is instead limited to highlighting those boundary arrangements that are the results of processes of boundary-spanning. The second limit lies in the scope of the research in that regional nor national-level governance arrangements were not considered, except in general context. However, as claimed by Sotarauta and Beer (2017, p. 220), while discussing their comparative research on place leadership, ‘at a fundamental level the findings reveal the influence of the “deep” and often overlooked influence of national governance arrangements on place leadership’. Despite the above limitations, the present research advances knowledge on both place leadership and collaborative governance, demonstrating how important connecting these literatures can be to future research agenda as well as opening up a variety of methodologies and methods of research (Beer & Irving, 2021). Moreover, our menu of city actions for climate change may represent a tool for better tackling the ‘wicked problem’ of climate change through specific and ad-hoc policies that can provide incentives and/or direct support for actions that tackle and mitigate climate change.

## DISCLOSURE STATEMENT

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## NOTE

1. Defined as ‘the processes and structures of public policy decision-making and management that engage people constructively across the boundaries of public agencies, levels of government, and/or the public, private and civic spheres in order to carry out a public purpose that could not otherwise be accomplished’ (Emerson et al., 2012, p. 2).

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